The potential abilities for using mathematical vectors in financial graphs

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CERTIFICATION OF APPROVAL

THE POTENTIAL ABILITIES FOR USING MATHEMATICAL VECTORS IN FINANCIAL GRAPHS

By

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Acknowledgements and Dedication

Dedicated to the advancement in the field of finance. By using this area of mathematics as a new tool for financial analysis. Applying calculus as vectors in financial displays. Many thanks.

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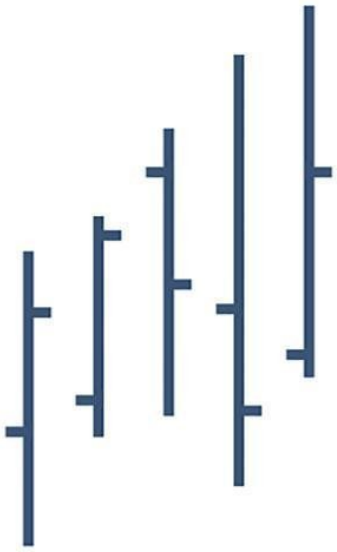
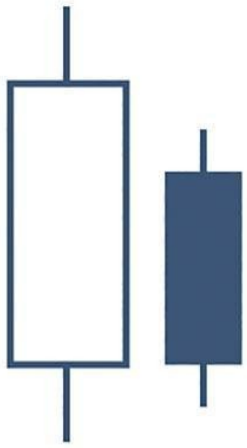
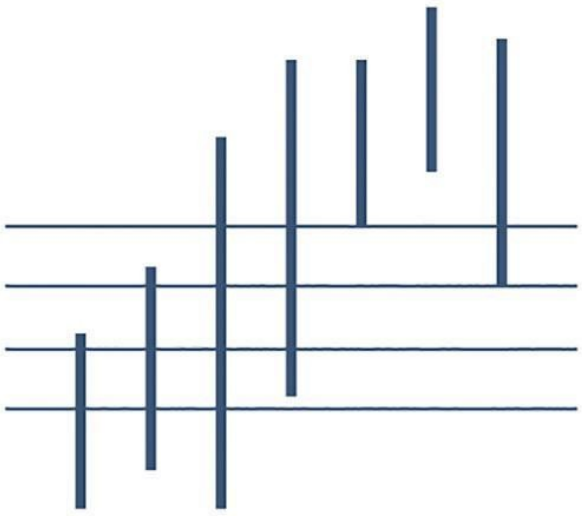




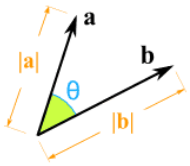
Caption. Candle sticks indicators



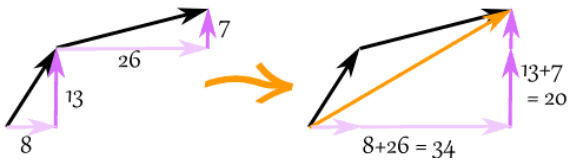
Caption. Fibonacci numbers, retracements and extensions

Caption. Candle sticks chart

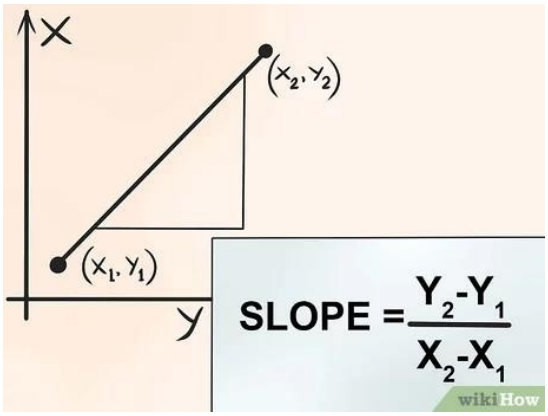
Caption. bar chart shows a sequence of vertical bars. Each bar joins the traded low to the traded high for a particular hour, day, week, month



Caption. Vectors degree and direction



Caption. Scalars field. Gradient of change, adding the co ordinates then divide two sums to get a figure.



Caption. Calculus co ordinates, credit wikiHow

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Abstract

By using mathematical vectors calculations as financial modeling then further into a new form of quantitative analysis instrument for linear financial computation graphs. A new tool in financial data analysis as an indicator.

Introduction

Financial indicators are considered one of the most important tools that are used in determining the decision to invest in any company, stock, or form of direct or indirect investment.
The use of vectors in financial charts and graphs as an instrument is a method of evaluating securities by analyzing the statistics generated by market activity, such as past prices and volume. Technical analysts do not attempt to measure a securitys intrinsic value, but instead use charts and other tools to identify patterns that can suggest future activity.

Despite all the exotic tools it includes, technical analysis really just studies supply and demand in a market in an attempt to determine what direction, or trend, will continue in the future. It attempts to understand the emotions in the market by studying the market itself, as opposed to its components. If understand the benefits and limitations of technical analysis, it can give you a new set of tools or skills that will enable you to be a better trader or investor.

Review of the Literature

- Financial Modeling

Financial models are essentially just tools to help people make business decisions. These decisions often include: whether or not to invest in a company, asset, or security. The “art” of financial modeling mostly relates to making assumptions about the future performance of the business being modeled. This is the most subjective and important

part of the valuation of a company. Financial Modeling is either building a model from scratch or maintaining the existing Model by implementing newly available data to it. As you can notice, all the above financial situations are of a complex and volatile nature. It helps the user to gain an in-depth understanding of all the components of the complex scenario.

In Investment Banking, it is used to forecast the potential future financial performance of a company by making relevant assumptions of how the firm or a specific project is expected to perform in the forthcoming years, for instance, how much cash flow a project is likely to produce within five years from its initiation.

It is easily possible to work on different individual parts of the Model without affecting the whole structure and avoiding huge blunders. It is useful when the inputs are volatile and are subject to change with newly available data. So there is a certain flexibility one can have with the structure when working on Financial Modeling as long as they are accurate.

- Quantitative Analysis

Quantitative analysis is the process of collecting and evaluating measurable and verifiable data such as revenues, market share, and wages in order to understand the behavior and performance of a business. In the past, business owners and company directors relied heavily on their experience and instinct when making decisions. A quantitative analyst’s main task is to present a given hypothetical situation in terms of numerical values. Quantitative analysis helps in evaluating performance, assessing financial instruments, and making predictions. It encompasses three main techniques of measuring data: regression analysis, linear programming, and data mining. quantitative techniques enable them to make the best estimates and thus minimize the risks associated with a particular decision. Ideally, quantitative models provide company owners with a better understanding of information to enable them to make the best possible decisions. Quantitative analysis can be used to identify patterns that may lend themselves to profitable security trades, but that isn’t its only value. While making money is a goal every investor can understand, quantitative analysis can also be used to reduce risk.

- Technical analysis

Technical analysis is a tool, or method, used to predict the probable future price movement of a security – such as a stock or currency pair – based on market data.

The theory behind the validity of technical analysis is the notion that the collective actions – buying and selling – of all the participants in the market accurately reflect all relevant information pertaining to a traded security.

Key Assumptions of Technical Analysis

Technical analysis is applicable to securities where the price is only influenced by the forces of supply and demand. Technical analysis does not work well when other forces can influence the price of the security. In order to be successful, technical analysis makes three key assumptions about the securities that are being analyzed:

High Liquidity - Liquidity is essentially volume. Heavily-traded stocks allow investors to trade quickly and easily, without dramatically changing the price of the stock. Thinly-traded stocks are more difficult to trade, because there aren't many buyers or sellers at any given time, so buyers and sellers may have to change their desired price considerably in order to make a trade. In addition, low liquidity stocks are often very low priced (sometimes less than a penny per share), which means that their prices can be more easily manipulated by individual investors. These outside forces acting on thinly-traded stocks make them unsuitable for technical analysis.
No Artificial Price Changes - Splits, dividends, and distributions are the most common “culprits” for artificial price changes. Though there is no difference in the value of the investment, artificial price changes can dramatically affect the price chart and make technical analysis difficult to apply. This kind of price influence from outside sources can be easily addressed by adjusting the historical data prior to the price change.
No Extreme News - Technical analysis cannot predict extreme events, including business events such as a company's CEO dying unexpectedly, and political events such as a terrorist act. When the forces of “extreme news” are influencing the price, technicians have to wait patiently until the chart settles down and starts to reflect the “new normal” that results from such news.
It is important to determine whether or not a security meets these three requirements before applying technical analysis. That's not to say that analysis of any stock whose price is influenced by one of these outside forces is useless, but it will affect the accuracy of that analysis.

Assist with Entry Point

Technical analysis can help with timing a proper entry point. Some analysts use fundamental analysis to decide what to buy and technical analysis to decide when to buy. It is no secret that timing can play an important role in performance. Technical analysis can help spot demand (support) and supply (resistance) levels as well as

breakouts. Simply waiting for a breakout above resistance or buying near support levels can improve returns.

It is also important to know a stock's price history. If a stock you thought was great for the last 2 years has traded flat for those two years, it would appear that Wall Street has a different opinion. If a stock has already advanced significantly, it may be prudent to wait for a pullback. Or, if the stock is trending lower, it might pay to wait for buying interest and a trend reversal.

Charting on Different Time Frames

Technical traders analyze price charts to attempt to predict price movement. The two primary variables for technical analysis are the time frames considered and the particular technical indicators that a trader chooses to utilize.

Types (tables figures page Vii)

Candlesticks

Candlestick charting is the most commonly used method of showing price movement on a chart. A candlestick is formed from the price action during a single time period for any time frame. Each candlestick on an hourly chart shows the price action for one hour, while each candlestick on a 4-hour chart shows the price action during each 4-hour time period.

Candlestick Patterns – Dojis

Candlestick patterns, which are formed by either a single candlestick or by a succession of two or three candlesticks, are some of the most widely used technical indicators for identifying potential market reversals or trend change.

Doji candlesticks, for example, indicate indecision in a market that may be a signal for an impending trend change or market reversal. The singular characteristic of a doji candlestick is that the opening and closing prices are the same, so that the candlestick body is a flat line. The longer the upper and/or lower “shadows”, or “tails”, on a doji

candlestick – the part of the candlestick that indicates the low-to-high range for the time period – the stronger the indication of market indecision and potential reversal.

Technical Indicators – Moving Averages

In addition to studying candlestick formations, technical traders can draw from a virtually endless supply of technical indicators to assist them in making trading decisions.

Moving averages are probably the single most widely-used technical indicator. Many trading strategies utilize one or more moving averages.

Technical Indicators – Pivots and Fibonacci Numbers

Daily pivot point indicators, which usually also identify several support and resistance levels in addition to the pivot point, are used by many traders to identify price levels for entering or closing out trades. Pivot point levels often mark significant support or resistance levels or the levels where trading is contained within a range. If trading soars (or plummets) through the daily pivot and all the associated support or resistance levels, this is interpreted by many traders as “breakout” trading that will shift market prices substantially higher or lower, in the direction of the breakout.

Daily pivot points and their corresponding support and resistance levels are calculated using the previous trading day’s high, low, opening and closing prices. I’d show you the calculation, but there’s really no need, as pivot point levels are widely published each trading day and there are pivot point indicators you can just load on a chart that do the calculations for you and reveal pivot levels. Most pivot point indicators show the daily pivot point along with three support levels below the pivot point and three price resistance levels above it.

Fibonacci Retracements

Fibonacci levels are another popular technical analysis tool. Fibonacci was a 12th-century mathematician who developed a series of ratios that is very popular with technical traders. Fibonacci ratios, or levels, are commonly used to pinpoint trading opportunities and both trade entry and profit targets that arise during sustained trends.

The primary Fibonacci ratios are 0.24, 0.38, 0.62, and 0.76. These are often expressed as percentages – 23%, 38%, etc. Note that Fibonacci ratios complement other

Fibonacci ratios: 24% is the opposite, or remainder, of 76%, and 38% is the opposite, or remainder, of 62%.

Technical Indicators – Momentum Indicators

Moving averages and most other technical indicators are primarily focused on determining likely market direction, up or down.

There is another class of technical indicators, however, whose main purpose is not so much to determine market direction as to determine market strength. These indicators include such popular tools as the Stochastic Oscillator, the Relative Strength Index (RSI), the Moving Average Convergence-Divergence (MACD) indicator, and the Average Directional Movement Index (ADX).

By measuring the strength of price movement, momentum indicators help investors determine whether current price movement more likely represents relatively insignificant, range-bound trading or an actual, significant trend.

Stock Chart Construction – Lines, Bars, Candlesticks

Stock charts can vary in their construction from bar charts to candlestick charts to line charts to point and figure charts. Nearly all stock charts give you the option to switch between the various types of charts, as well as the ability to overlay various technical indicators on a chart. You can also vary the time frame shown by a chart. While daily charts are probably the most commonly used, intraday, weekly, monthly, year-to-date (YTD), 5-year, 10-year, and a complete historical lifetime of a stock are also available.

There are relative advantages and disadvantages to using different chart construction styles and to using different time frames for analysis. What style and time frame will work best for you as an individual analyst or investor is something that you can only discover through actually doing stock chart analysis.

Using Technical Indicators

In analyzing stock charts for stock market investing, investors use a variety of technical indicators to help them more precisely probable price movement, to identify trends, and to anticipate market reversals from bullish trends to bearish trends and vice-versa.

One of the most commonly used technical indicators is a moving average. The moving averages that are most frequently applied to daily stock charts are the 20-day, 50-day, and 200-day moving average. Generally speaking, as long as a shorter period moving average is above a longer period moving average, a stock is considered to be in an overall uptrend. Conversely, if shorter term moving averages are below longer term moving averages, then that indicates an overall downtrend.

Trend and Momentum Indicators

There is virtually an endless list of technical indicators for traders to choose from in analyzing a chart. Experiment with various indicators to discover the ones that work best for your particular style of trading, and as applied to the specific stocks that you trade. You'll likely find that some indicators work very well for you in forecasting price movement for some stocks but not for others.

Technical analysts often use indicators of different types in conjunction with each other. Technical indicators are classified into two basic types: trend indicators, such as moving averages, and momentum indicators, such as the MACD or the average directional index (ADX). Trend indicators are used to identify the overall direction of a stock's price, up or down, while momentum indicators gauge the strength of price movement.

- Statistics

Financial Data load collection statistical sorting

The mathematical theories behind statistics rely heavily on differential and integral calculus, linear algebra, and probability theory. Statisticians, people who do statistics, are particularly concerned with determining how to draw reliable conclusions about large groups and general events from the behavior and other observable characteristics of small samples. These small samples represent a portion of the large group or a limited number of instances of a general phenomenon.

The two major areas of statistics are known as descriptive statistics, which describes the properties of sample and population data, and inferential statistics, which uses those properties to test hypotheses and draw conclusions.

Some common statistical tools and procedures include the following:

Descriptive
Mean (average)
Variance
Median
Mode
Standard deviation

Mean

- The mean is the mathematical average of a set of two or more numbers.
- The arithmetic mean and the geometric mean are two types of mean that can be calculated.
- The arithmetic mean is calculated by summing the numbers in a set and dividing by the total quantity of numbers.
- The geometric mean is more complicated and involves the multiplication of the numbers taking the nth root.
- The mean helps to assess the performance of an investment or company over a period of time, macroeconomic conditions, or how current financial conditions compare to prior periods.

Median

- The median is the middle number in a sorted, ascending or descending, list of numbers and can be more descriptive of that data set than the average.
- The median is sometimes used as opposed to the mean when there are outliers in the sequence that might skew the average of the values.
- If there is an odd amount of numbers, the median value is the number that is in the middle, with the same amount of numbers below and above.
- If there is an even amount of numbers in the list, the middle pair must be determined, added together, and divided by two to find the median value.

Mode

- In statistics, the mode is the most commonly observed value in a set of data.
- For the normal distribution, the mode is also the same value as the mean and median.
- In many cases, the modal value will differ from the average value in the data.

Variance

- Variance is a measurement of the spread between numbers in a data set.
- Investors use variance to see how much risk an investment carries and whether it will be profitable.
- Variance is also used to compare the relative performance of each asset in a portfolio to achieve the best asset allocation.

Standard deviation

- Standard deviation measures the dispersion of a dataset relative to its mean.
- It is calculated as the square root of the variance.
- Standard deviation, in finance, is often used as a measure of a relative riskiness of an asset.
- A volatile stock has a high standard deviation, while the deviation of a stable blue-chip stock is usually rather low.
- As a downside, the standard deviation calculates all uncertainty as risk, even when it’s in the investor's favor—such as above-average returns.

Types of financial displays (Graphs)

Line Graphs

The most common, simplest, and classic type of chart graph is the line graph. This is the perfect solution for showing multiple series of closely related series of data. Since

line graphs are very lightweight (they only consist of lines, as opposed to more complex chart types, as shown below), they are great for a minimalistic look.

Bar Graphs

Bars (or columns) are the best types of graphs for presenting a single data series. Bar charts have a much heavier weight than line graphs do, so they really emphasize a point and stand out on the page.

Combo Chart

The above two types of graphs can be combined to create a combo chart with bars and lines. This is very useful when presenting two data series with a very different scale and might be expressed in different units. The most common example is dollars on one axis and percentage on the other axis.

Scatterplot

The scatterplot is excellent for showing the relationship between two data series and determining their correlation. The scatterplot is great for showing what a distribution of data points looks like and drawing a line of best fit for regression analysis.

Pie Graph

Pie charts have a bad reputation and are known for being messy and hard to read. However, if you’re trying to illustrate the percentage breakdown of a small number of data points, they can be very effective. For example, the percentage of people who prefer bananas, pineapples, and grapes.

Histogram

Histograms are a type of graph that shows the distribution of a dataset. They graph the percentage or the number of instances of different categories. For example, to show the distribution of age categories (0-10, 11-20, 21-30, etc.), we can clearly see which categories are the biggest and how many people fall into each.

- Vectors and Scalars

A vector quantity, or vector, provides information about not just the magnitude but also the direction of the quantity. When giving directions to a house, it isn't enough to say that it's 10 miles away, but the direction of those 10 miles must also be provided for the information to be useful. Variables that are vectors will be indicated with a boldface variable, although it is common to see vectors denoted with small arrows above the variable.

Vector Components

Vectors are generally oriented on a coordinate system, the most popular of which is the two-dimensional Cartesian plane. The Cartesian plane has a horizontal axis which is labeled x and a vertical axis labeled y. Some advanced applications of vectors in physics require using a three-dimensional space, in which the axes are x, y, and z. This article will deal mostly with the two-dimensional system, though the concepts can be expanded with some care to three dimensions without too much trouble.

Vectors in multiple-dimension coordinate systems can be broken up into their component vectors. In the two-dimensional case, this results in a x-component and a y-component.

Direction of the Vector

The vector product will be perpendicular to the plane created from those two vectors. If you picture the plane as being flat on a table, the question becomes if the resulting vector go up (our "out" of the table, from our perspective) or down (or "into" the table, from our perspective).

Properties of the Gradient

Measuring gradient can be represent these rates of change in a vector. The rate of change of a function. It’s a vector (a direction to move) that:

Points in the direction of greatest increase of a function.

Is zero at a local maximum or local minimum (because there is no single direction of increase)

The term "gradient" is typically used for functions with several inputs and a single output (a scalar field)

Examples of Vectors
The most common examples of the vector are Velocity, Acceleration, Force, Increase/Decrease in Temperature etc. All these quantities have directions and magnitude both. Therefore, it is necessary to calculate them in their vector form.

Also, speed is a quantity that has magnitude but no direction. This is the basic difference between speed and velocity.

Vector Notation
As we know already, a vector has both magnitude and direction. In the above figure, the length of the line AB is the magnitude and head of the arrow points towards the direction.

Magnitude of a Vector
The magnitude of a vector is shown by vertical lines on both the sides of the given vector “|a|”. It represents the length of the vector. Mathematically, the magnitude of a vector is calculated by the help of “Pythagoras Theorem,”

Operations on Vectors

Addition of Vectors

Subtraction of Vectors

Scalar Multiplication of Vectors

Components of Vectors (Horizontal & Vertical)

There are two components of a vector in the x-y plane.

1Horizontal Component
2Vertical Component

Vectors change gradient as a measurement for Rate of Change (ROC)

The rate of change (ROC) is the speed at which a variable changes over a specific period of time. ROC is often used when speaking about momentum, and it can generally be expressed as a ratio between a change in one variable relative to a corresponding change in another; graphically, the rate of change is represented by the slope of a line. The ROC is often illustrated by the Greek letter delta.

Understanding Rate of Change (ROC)

Rate of change is used to mathematically describe the percentage change in value over a defined period of time, and it represents the momentum of a variable. The calculation for ROC is simple in that it takes the current value of a stock or index and divides it by the value from an earlier period. Subtract one and multiply the resulting number by 100 to give it a percentage representation.

The Importance of Measuring Rate of Change

Rate of change is an extremely important financial concept because it allows investors to spot security momentum and other trends. For example, a security with high momentum, or one that has a positive ROC, normally outperforms the market in the short term. Conversely, a security that has a ROC that falls below its moving average, or one that has a low or negative ROC is likely to decline in value and can be seen as a sell signal to investors.

Rate of Change and Its Relationship With Price
The rate of change is most often used to measure the change in a security's price over time. This is also known as the price rate of change (ROC). The price rate of change can be derived by taking the price of a security at time B minus the price of the same security at time A and dividing that result by the price at time A.

Price ROC=B−A
where:
B=price at current time
A=price at previous time

ROC = vectors change gradient

Vectors in-depth, introduce mathematical functions

Vector Calculus (list of tables page Vii)

Vector Calculus, also known as vector analysis, deals with the differentiation and integration of vector field, especially in the three-dimensional Euclidean space. Vector fields represent the distribution of a vector to each point in the subset of space. In Euclidean Space, the vector field on a domain is represented as a vector-valued function that compares the n-tuple of real numbers to each point on the domain. Vector analysis is an analysis which deals with the quantities that have both magnitude and direction. Vector calculus deals with two integrals such as line integrals and surface integrals.

Line Integral

In Vector Calculus, a line integral of a vector field is defined as an integral of some function along a curve. In simple words, a line integral is an integral in which the function to be integrated is calculated along with a curve. We can integrate some specific type of vector-valued functions along with a curve. For example, we can also integrate a scalar-valued function along a curve. Sometimes, a line integral is also known as a path integral, or curve integral or curvilinear integrals.

Function as a derivative and as a variable

Gradient vs Derivative and The Gradient Vector
A gradient can refer to the derivative of a function. Although the derivative of a single variable function can be called a gradient, the term is more often used for complicated, multivariable situations where you have multiple inputs and a single output. In those cases, the gradient vector stores all the partial derivative information for every variable.

Methodology

Using in Financial Plans

A financial plan is a document containing a person’s current money situation and long-term monetary goals, as well as strategies to achieve those goals. A financial plan begins with a thorough evaluation of the person’s current financial state and future expectations and may be created independently or with the help of a certified financial planner.

- A financial plan documents an individual’s long-term financial goals and creates a strategy for achieving them.
- The plan should be comprehensive but also highly individualized, to reflect the individual’s personal and family situations, risk tolerance, and future expectations.
- The plan starts with a calculation of the person’s current net worth and cash flow and ends with a strategy.

The core of a financial plan is a person’s clearly defined goals. These may include funding a college education for the children, buying a larger home, starting a business, retiring on time, or leaving a legacy.

Investment Risk

Each type of investment has it’s own type of risk. There are a myriad of different types of investments but the main ones are Cash, Bonds, Equities (stocks and shares) and property.

Cash
Of the 4 main investment types, cash is considered to have the lowest degree of risk, particularly over the short term, as it is immediately liquid and does not present the risk of capital loss. However, cash does carry inflation risk which means that if the rate of interest being paid is lower than the escalation in the price of goods and services, the purchasing power of your cash is decreasing.

Bonds
Bonds are effectively debt. Government bonds are commonly referred to as gilts or treasuries. When you buy a Government bond you are lending money to a Government in return for a fixed rate of interest. These are considered higher risk than cash but less risky than equities. Corporate Bonds work on the same principle but carry a higher degree of risk and therefore a higher fixed rate of interest. Bonds are subject to interest rate risk and inflation risk. If the interest rate rises then the face value of a bond will decrease and if the price of goods and services escalates above the fixed rate of interest then the real value of your investment will erode. If, for example, you bought a 10 year government bond during a low interest rate environment and sold it before its maturity date then you could suffer a significant capital loss.

Equities (Stocks and Shares)
Equities are effectively shares in a company and are considered to have the highest degree of risk, particularly short term risk. The degree of risk can vary dramatically with major market Blue Chip equities considered less risky than small cap emerging market equities. Equities are subject to a variety of risks with major market equities considered less risky than emerging market equities. The risks associated with investing in equities reduce over time and in general have the capacity to out perform cash and bonds over the longer term.

Investments strategy

Strategy 1: Value Investing
Value investors are bargain shoppers. They seek stocks they believe are undervalued. They look for stocks with prices they believe don’t fully reflect the intrinsic value of the security. Value investing is predicated, in part, on the idea that some degree of irrationality exists in the market. This irrationality, in theory, presents opportunities to get a stock at a discounted price and make money from it.

Strategy 2: Growth Investing
Rather than look for low-cost deals, growth investors want investments that offer strong upside potential when it comes to the future earnings of stocks. It could be said that a growth investor is often looking for the “next big thing.” Growth investing, however, is not a reckless embrace of speculative investing. Rather, it involves evaluating a stock’s current health as well as its potential to grow.

A drawback to growth investing is a lack of dividends. If a company is in growth mode, it often needs capital to sustain its expansion. This doesn’t leave much (or any) cash left for dividend payments. Moreover, with faster earnings growth comes higher valuations, which are, for most investors, a higher risk proposition.

Strategy 3: Momentum Investing
Momentum investors ride the wave. They believe winners keep winning and losers keep losing. They look to buy stocks experiencing an uptrend. Because they believe losers continue to drop, they may choose to short-sell those securities.

Momentum investors are heavily reliant on technical analysts. They use a strictly data-driven approach to trading and look for patterns in stock prices to guide their purchasing decisions. This adds additional weight to how a security has been trading in the short term.

Momentum investors act in defiance of the efficient-market hypothesis (EMH). This hypothesis states that asset prices fully reflect all information available to the public. A momentum investor believes that given all the publicly-disclosed information, there are still material short-term price movements to happen as the markets aren't fully recognizing recent changes to the company.

Despite some of its shortcomings, momentum investing has its appeal. Consider, for example, that The MSCI World Momentum Index has averaged annual gains of 11.76% since its inception, more than twice that of the broader benchmark.5 This return probably doesn’t account for trading costs and the time required for execution.

Forecasting Methods

Businesses choose between two basic methods when they want to predict what can possibly happen in the future, namely, qualitative and quantitative methods.

1. Qualitative method

Otherwise known as the judgmental method, qualitative forecasting offers subjective results, as it is comprised of personal judgments by experts or forecasters. Forecasts are often biased because they are based on the expert's knowledge, intuition, and experience, and rarely on data, making the process non-mathematical.

One example is when a person forecasts the outcome of a finals game in the NBA, which, of course, is based more on personal motivation and interest. The weakness of such a method is that it can be inaccurate.

2. Quantitative method

The quantitative method of forecasting is a mathematical process, making it consistent and objective. It steers away from basing the results on opinion and intuition, instead utilizing large amounts of data and figures that are interpreted.

Stock forecasting

Stocks are volatile primarily owing to these reasons since external factors and popular beliefs are almost always based on no solid foundation. Consequentially, the stock prediction goes awry. The two stock forecasting methods any investor or stock trader must use are the Fundamental Research and Stock Forecast Algorithms.

Fundamental Research is a mandatory method for any investor. The method involves meticulous studying of a company's financial health, the value of assets, debts, cash, revenues, expenses, profitability and plans of development. Fundamental Research is a well rounded stock prediction method for all the data that actually matters are taken into consideration while determining the true value of a stock A company may generate healthy revenue but owing to huge expenses, they may not be highly profitable. It is common for a well performing company to sit on a pile of cash and not use it wisely in other investment or diversification avenues. Having all these statistics can be very handy for any investor. Once you have all this information, it is easy to determine if the value of a stock is overhyped or below par. Thus, it is easier to forecast the future of a stock and determine whether to acquire a stock or to sell one. Fundamental Research also helps an investor since it offers insights to dividends the company has been paying over the years and you can have some statistical stock prediction and not just volatility. But knowing fundamentals is not enough. It is common for stocks to move in waves. Stocks always fluctuate between "oversold" and "overbought" conditions. These terms describe the changing demand or popularity, and are relative to the time frame and to other investment venues. When gold becomes popular, lots of investors get caught in

the “Gold Rush” and forget the stock fundamentals and sell stocks to buy gold. They forget that gold does not make anything and just sits there. It’s just a trophy, a protection against inflation at best. This is just one example of how different markets interact.

Develope forecasts

Stock Forecast Algorithms are aimed at making the best use of the right time, right price and the right quantity of stocks that must be traded. The Algorithm in place helps a trader to forecast the time at which the price would be the most favorable to either buy or sell a stock. The system predicts absolutely on numbers and has not even remotely affected by popular emotions.
Finally, one should not get caught up in the daily trading, and miss out on global trends.

Discussion

To conclude, when a stock prices line changed direction given steady increase previously, the sudden change in direction has a gradient of change. (List of tables; figures. Scalars field). By measuring this change, a degree of predictions can be calculated. By adding these degree of change, over all positive or negative or 0.0s in numbers, can be total the market conditions in future dates. There is a certain some abilities and capabilities in using vectors as a new tool of financial analysis.